

# Salinas Valley Water Coalition



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## **Comments by Timothy J. Durbin, PE West Yost Associates**

## What is the “problem” that needs to be addressed?

- The current concentrations of nitrate in Salinas Valley groundwater is the result of complex processes operating over large areas and long periods. The processes include loading from natural, residential, municipal, and residential sources; the advective and dispersive transport of nitrate away from source areas due to soil-moisture, groundwater, and surface-water flows; and the transformation of nitrogen species within the soil-crop-aquifer system. These complexities are addressed in an interesting study by the Lawrence Livermore National Laboratory of the Llagas groundwater basin (Carle and other, 2006), which underlies the agricultural lands located near Morgan Hill and Gilroy. The basin area is about 15 percent of that for the Salinas Valley. The investigators used a soil-aquifer model to study the impacts of nitrate loading to the groundwater basin from poultry farms, dairies, and irrigated agriculture. A model scenario involved increasing nitrate loads from all sources during 1945-1985 and constant loads after 1985, except that poultry farming ceases in 2045. Even though the cessation of poultry farming removes about 50 percent of the nitrate load from the Llagas groundwater basin, the simulation results (Carle and others, 2006, figures 11 and 12) indicate that very little reduction in groundwater nitrate is achieved 150 years after cessation of poultry farming. Another interesting result is that nitrates continued to increase within parts of the basin even after the cessation of poultry farming.